UNIVERSITI TEKNOLOGI MARA

SCE554: PROBLEM SOLVING IN SCIENCE

Course Name (English)	PROBLEM SOLVING IN SCIENCE APPROVED
Course Code	SCE554
MQF Credit	3
Course Description	The course is designed to introduce students to the concepts and theory related to problem solving in science. Students will explore and evaluate scientific issues and propose suitable solution for the problems. The problems vary and related to Physic, Chemistry, Biology and other science-based problems. The SSCS model for problem solving will be applied and discussed in detail. The emphasis is on exploration of various science contexts, to pose problems and problem extensions, to solve problems and to communicate and share with others. Constructivist learning will be emphasized in the problem solving in science.
Transferable Skills	At the end students who attended the course would be able to show skill to solve problem or issues and be able to teach other steps to solve issues or problems.
Teaching Methodologies	Lectures, Discussion, Presentation
CLO	CLO1 Critically evaluate problem solving concept and processes through article/journal reviews CLO2 Evaluate scientific issues and propose suitable solution using SSCS model CLO3 Integrate mathematics,graphing, drawing,computer, language arts, and other skills in a holistic manner
Pre-Requisite Courses	No course recommendations

Topics
1. Concept of Problem Solving 1.1) Introduction to Problem Solving in general 1.2) Introduction to Problem Solving in Science
2. Stages of Problem Solving model : Search, Solve, Create, and Share. 2.1) Understanding the concept of Search, Solve, Create and Share
3. Students search for issues, researchable questions about a topic in science they like to investigate 3.1) Theme for Issues in Science and technology. 3.2) Searching for appropriate article on issues related to science. 3.3) Research Question and Identification Hypothesis
4. Students design and implements to solve their researchable questions 4.1) Designing Research and Developing research tool. 4.2) Quantitative and Qualitative study.
5. Students analyze and interpret data/information, and then create a means for communicating their findings. 5.1) Data Analysis and Merging information
6. Group project presentation : Students share their results and evaluate their investigations 6.1) Presentation and self reflection.

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Group Project	Weekly Presentation Proposal Progress	40%	CLO2
Journal/Article Critique	Read, Review and Reflect a journal/ article.	20%	CLO1
Written Report	Proposal	40%	CLO3

Reading List

Reference Book Resources

- **Steven E Leblanc, Benjamin Rizzo , H. Scott Fogler 2013, *Strategies for Creative Problem Solving*, 3rd Edition Ed., ., Pearson Education US [ISBN: 1397801330916]**
- **Hamidah, I., Aisyah, S., Danuwijaya, A. A., Abdullah, A. G., Yuliani, G., & Munawaroh, H. S. 2017, *Ideas for 21st Century Education*, Routledge [ISBN: 1351680382]**
- **Zhou, C. 2016, *Handbook of Research on Creative Problem-Solving Skill Development in Higher Education*, NSTA Press Book [ISBN: 1397815225064]**
- **Pizzini, E. 2005, *Problem Solving: An Instructional Approach*, . Ed., ., Science Education Center, The Uni of Iowa, US . [ISBN: .]**

Article/Paper List This Course does not have any article/paper resources

Other References This Course does not have any other resources